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THE RAAF IN SEA

SPECIAL REPORT

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Contemporary
Historical
Examination of
Current
Operations
REPORT

THE RAAF IN SEA (U)

30 SEPTEMBER 1970

HQ PACAF
Directorate, Tactical Evaluation
CHECO Division

Prepared by:

MR JAMES T. BEAR
Project CHECO 7th AF, DOAC

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The counterinsurgency and unconventional warfare environment of Southeast Asia has resulted in the employment of USAF airpower to meet a multitude of requirements. The varied applications of airpower have involved the full spectrum of USAF aerospace vehicles, support equipment, and manpower. As a result, there has been an accumulation of operational data and experiences that, as a priority, must be collected, documented, and analyzed as to current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity that would be primarily responsive to Air Staff requirements and direction, and would provide timely and analytical studies of USAF combat operations in SEA.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements at Hq 7AF and 7AF/13AF, Project CHECO provides a scholarly, "on-going" historical examination, documentation, and reporting on USAF policies, concepts, and doctrine in PACOM. This CHECO report is part of the overall documentation and examination which is being accomplished. Along with the other CHECO publications, this is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM.


ROLAND A. CAMPBELL, Major General, USAF
Chief of Staff

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CHAPTER I

OVERVIEW

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In 1964 President Johnson publicly urged other non-Communist nations to join in the effort to defeat Communist-supported insurgency in Vietnam. By 1966, seven had done so: Australia, New Zealand, The Republic of Korea, Thailand, The Republic of the Philippines, The Republic of China, and Spain. Of these, only Australia played a significant role in the air war. She furnished, along with other smaller units, bomber, transport, and helicopter squadrons which performed on a level of competence widely admired by the U.S. Air Force in Vietnam. On their own, these units developed tactics which were borrowed by Seventh Air Force (7AF) and put to good use. This was particularly true in the case of the Australian Canberra bombers. Because they could deliver ordnance with a precision no other aircraft in the theater could match under the same conditions, they were given targets that would otherwise have had to be attacked with expensive guided bombs. Over the years, the Australian cargo aircraft unit maintained consistently higher tons-per-sortie and operational-readiness averages than equivalent U.S. units. Furthermore, the Australians' employment of scout helicopters, forward air controllers, and targeting procedures in their area of responsibility was more successful in actually putting bombs on real targets than was the case in most tactical areas. At the same time, Australia was in Vietnam to learn what she could--by testing her doctrines and tactics for jungle warfare and by observing U.S. and Vietnamese methods. All in all, then, it was a fruitful association.

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CHAPTER II

GENERAL BACKGROUND

By sending 30 officers and warrant officers to advise the Army of the Republic of Vietnam (ARVN) in July 1962, Australia became the first Free World nation after the United States to join South Vietnam in its struggle against Communist forces.^{1/} By 1967 Australia had also become the second foreign country in Vietnam with all three of its military services in active combat.^{2/} Its contingent numbered over 8,000 men in 1970 (of whom 700 were airmen), third in size among Free World Forces, after the United States and the Republic of Korea.^{3/} (During the same approximate period, from 1962 to mid-1968, half a squadron of Australian Air Force F-86s was stationed at Ubon in Thailand, at the request of the Southeast Asia Treaty Organization, to help assure the air defense of Thailand.) On 16 December 1969, following similar U.S. announcements about American troops, Australian Prime Minister John Gorton publicly revealed that unspecified numbers of the Royal Australian forces would be withdrawn from Vietnam starting in 1970.^{4/}

Australia, like New Zealand, paid its own way in the war, not being subsidized or recompensed as were the other Free World forces.^{5/} Through its efforts, a considerable strategic area guarding the southeast approaches to Saigon and Long Binh was largely cleared of a once dangerous Viet Cong threat, and strong pacification and civic-action programs were substituted. A U.S. Presidential Citation, among other awards, attested to the efficacy

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of the Australian military contribution.^{6/}

After the initial commitment of the 30 Australian Army advisors in July 1962 (their number later grew to 100), a C-7 Caribou squadron was sent to the Republic of Vietnam (RVN) in mid-1964. Its aircraft were integrated into the USAF airlift system, and the Australian-configured Caribous thus became the first C-7s to be used by 7AF, antedating the transfer of U.S. Army C-7s by 2-1/2 years.^{7/} In 1965 the first Australian fighting troops arrived in RVN, and the following year they were constituted as a task force, their headquarters set up in a rubber plantation at Nui Dat, southeast of Saigon.^{8/} In August 1966, a 150-man Australian company successfully drove off two Viet Cong (VC) battalions trying to dislodge them from that plantation.^{9/} During that year the task force grew to 5,000 men and operated in a manner similar to an independent U.S. brigade.

An RAAF helicopter squadron accompanied the task force as a support unit and was based at Vung Tau, a U.S. Army airfield on the coast near the task force headquarters.^{10/} The Australian Army Aviation Corps based a "reconnaissance flight," consisting of helicopters and light planes, at the headquarters itself to support liaison activities, perform visual reconnaissance, and carry out psychological warfare in Australia's area of responsibility, Phuoc Tuy Province, and, when required, Bien Hoa. On 19 April 1967, bombers were added in the form of B-57 Canberras, which became a working squadron of the USAF's 35th Tactical Fighter Wing at Phan Rang AB.^{11/} Only four days later their crews hit a wide range of

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targets in RVN, becoming the first RAAF crews to drop bombs in the Vietnam War.^{12/} In October the Royal Australian Navy deployed UH-1 crews and ground-support personnel to serve with the U.S. Army's 135th Helicopter Assault Company at Bear Cat, RVN. Previously in 1967, Navy guided-missile destroyers and scuba-equipped harbor security divers had been assigned to duty in the Gulf of Tonkin, the South China Sea, and along the coast of Vietnam.^{13/} In addition, a small number of forward air controllers (FACs), F-4 pilots, ground-control intercept specialists, specialist photographic officers, and photo interpreters were attached to and operationally integrated with U.S. units throughout the country.

Resupply, for those items not bought from the U.S. military, was carried out from Australia by RAAF C-130s and Qantas Airline contract aircraft, as were the rotation and medical evacuation of personnel.^{14/}

In July 1970 Australia's 8,000 servicemen in Vietnam were divided among (a) the 5,000-strong task force composed of three infantry battalions and supporting units based at Nui Dat, a logistic support group of about 1,300 at Vung Tau, the Australian Force headquarters of 280 at Free World military headquarters in Saigon, and some 100 Army advisors working in scattered areas; (b) 300 Navy men--the divers and destroyer crews; and (c) 700 Air Force personnel divided among the Canberra squadron at Phan Rang, the Caribou and helicopter-assault squadrons at Vung Tau, and supporting detachments on allied bases. These servicemen were commanded by an Army major general whose deputy was an RAAF air commodore (brigadier general equivalent).^{15/}

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During the six years it operated in Vietnam prior to the writing of this report, the RAAF flew its missions without a single operational loss or fatality--although there *were* injuries, its aircraft took their share of hits from ground fire, and one was destroyed on the ground by mortar fire, in addition to contributing to the RVN's fight against Communist forces, the RAAF was using its Vietnam experience as a source of information and for the development of techniques which were later used in its choice of future aircraft, training of personnel, and elaboration of RAAF doctrine. For every squadron operating in Vietnam, there was one training in Australia, and the personnel were regularly rotated.^{16/}

Most Australian units also contained a few New Zealanders, since the military personnel sent to Vietnam by New Zealand were integrated into corresponding Australian units, under an arrangement reminiscent of the World War II "Anzac" outfits.

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CHAPTER III

THE HELICOPTER MISSION

The Royal Australian Navy, Army, and Air Force all had their separate helicopter missions in Vietnam.

The Army operated its own 161st Reconnaissance Flight (principally, a liaison or special-air-missions flight) to support the Australian Task Force headquarters at Nui Dat. From its establishment in September 1965, with two helicopters and two fixed-wing aircraft, it grew to six UH-13 helicopters, three fixed-wing Porters, and one Cessna 180. These aircraft were often pressed into artillery spotting and visual reconnaissance service.^{17/}

For its part, the Navy sent 54 helicopter specialists and pilots--but no helicopters--for detached duty in Vietnam in October 1967, not only to contribute to the allied effort but, just as importantly, to give the Royal Australian Navy combat experience with helicopters. Eight naval helicopter pilots, four observer officers, four air crewmen, and 30 ground-support men deployed with the 135th U.S. Army Helicopter Assault Company at Bear Cat, III Corps, not far from the Australian tactical area of responsibility. In addition, eight Royal Australian Navy helicopter pilots were attached to the RAAF's helicopter squadron, Number 9, at Vung Tau, until February 1969. The naval personnel were fully integrated, for operational purposes, into the U.S. Army and RAAF units, there working like any other members of the units.^{18/} When the Australian Army units in

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Phuoc Tuy Province needed additional helicopter support, it was the 135th U.S. Army Company, to which the bulk of the Navy personnel were attached, that gave it to them--an arrangement incorporated into Australia's agreement with MACV.^{19/}

RAAF No. 9 Squadron, located at Vung Tau, was Australia's largest helicopter activity in Vietnam. Daily, its 16 UH-1 aircraft flew the classic Army support missions for the Royal Australian Army contingent--as well as for U.S. units, when necessary. These missions included troop movements, clandestine insertions and extractions of special reconnaissance patrols, resupply of Army units in the field, medical evacuation of battle casualties, leaflet drops, and gunship cover. The squadron often flew special patrols into areas in its province that had been hit by B-52 raids, in order to assess the bomb damage. And in certain cases, No. 9 took part in joint large-scale combat-assault operations with U.S. Army helicopter units.^{20/}

Through formal agreements, No. 9 Squadron was placed under the operational control of the Australian Task Force (ATF) Commander, and was thus the only one of the RAAF's three squadrons in Vietnam not under USAF control. (On the other hand, the ATF as a whole was placed under the operational control of the U.S. II Field Force Commander.) In furnishing helicopter support to the task force, No. 9 came closer to actual participation in the shooting war on the ground than did the other two RAAF squadrons. Its area of operational responsibility covered the entire

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southeastern sector of the ARVN Military Region 3 and, when the tactical situation so indicated, included the adjacent province of Binh Tuy in MR 3.^{21/} The establishment of the squadron in June 1966 coincided with that of the task force, and by the end of July the squadron was operational. In September, with only eight of its UH-1Bs having arrived in Vietnam, the squadron was flying over 2,000 sorties a month (about 350 flying hours).^{22/}

These first few months were marked by controversy between the Australian ground commander and the RAAF.^{23/} Fortunately, it did not go deep nor last any longer than the time it took each organization to become familiar with the needs and methods of the other. An RAAF officer close to the situation at the time said simply:^{24/}

Initially, there was some difficulty in establishing working relationships--and in aligning, on the one hand, the Army's operational requirements with, on the other hand, the techniques and tactics developed and employed by the RAAF helicopters.

Eventually, however, the air was cleared by (1) strengthening the communication links between the Army Tactical Operations Center and the Air Force Operations Center; (2) the Army's providing more intelligence information to the Air Force liaison section at task force headquarters; (3) including the RAAF in more of the pre-operational planning, so that No. 9 Squadron could better prepare in advance for them and utilize its helicopters more efficiently; and finally (4) positioning armed UH-1s at

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Nui Dat each day from sunrise to sunset.^{25/}

ADDITION OF GUNSHIPS

Since 1966, when the squadron had boasted eight B-model UH-1s, No. 9 had, by mid-1970, doubled its strength, acquiring in the process the improved and more powerful H-model.^{26/} During 1968, however, the squadron repeatedly requested from its higher headquarters the means to modify a certain number of its aircraft, the better to enable it to perform all the missions of a modern helicopter assault company. Medical evacuation, "people sniffing," leaflet dropping, "psy war" (psychological warfare) broadcasting, and crop-spraying posed no real problems, since the "slick" helicopters' configurations could be quickly changed from day to day by means of kits. For them to become gunships or command-and-control aircraft, however, required permanent modifications, and these were what No. 9 came to feel it needed. Since 1966, the squadron had had just one command-and-control helicopter, but it sorely needed a back-up chopper configured in the same way. When, for example, No. 9 needed gunship support in the form of light fire teams, it was invariably obliged to call upon the U.S. Army; and, not infrequently, this support was not available.^{27/} Again, when VC offensives or special allied operations made the squadron fly more than the normal number of hours, with a resulting increase in maintenance, the need for their own back-up command-and-control aircraft and their own gunships was felt with especial acuteness.

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When inserting and extracting long-range reconnaissance patrols--a regular task--the squadron consistently asked for more light fire teams than the U.S. Army could provide. Starting in early 1968, therefore, the squadron began calling for modification kits that would allow four of its troop-carrying aircraft to be converted into gunships of the type that had successfully furnished close air cover for assault and other helicopter operations of the U.S. Army (See Figure 1). They were, perhaps, influenced by the fact that during the 1968 Tet Offensive, Vung Tau airfield had found itself under serious mortar attack, until the RAAF operations officer called for, and directed from his bunker, the helicopter (and other) gunship fire that finally silenced the weapon. ^{28/}

It was not until the spring of 1969, however, that No. 9 Squadron's persistent campaign bore fruit in the form of gunship kits. For the crews, in place of a formal course, it was on-the-job training all the way. The selected gunship crew members perforce flew their training missions against the enemy--even though it had been planned that practice training would first be conducted--for in April 1969, on one of the first flights, the aircraft was diverted to protect some Australian ground troops being overrun by the VC. The crew "in training" learned how to use their aircraft by firing at live targets, which were, of course, not averse to firing back. ^{29/}

The Australian crews of the other helicopters and the Australian ground troops were no exception to the laws of human nature and preferred

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The few mountains in the Australians' area of responsibility were made almost impregnable by the VC, but elsewhere the Australian forces kept the VC population low. For close air support during combat engagements, the ground commanders preferred helicopter gunships under most conditions.

FIGURE 1

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from the start to have their gunship cover in the hands of fellow countrymen. They gave these aircraft the good Australian-sounding call sign, "Bushranger."^{30/} It was nevertheless a Bushranger which accidentally fired on Australian troops in June 1969. Two months before, the squadron had reported, "With the introduction of the gunship, No. 9 Squadron is now in the shooting business, and there is much enthusiasm to find targets and shoot up some 'Charlies.'"

From those early days in 1969 a subtle evolution apparently took place; for, by mid-1970, we find the Bushrangers pursuing a remarkably circumspect policy in connection with "shooting up Charlies." By this time, olfactory reconnaissance had become a regular mission of the squadron, and the task force headquarters almost daily had a slick helicopter with a "people-sniffer" device aboard flying above suspicious areas and taking readings (See Figure 2). When a high reading was noted, a Bushranger, which was usually fragged to follow close behind, could rocket the area.

The usual procedure, however, was for the Bushranger to "hold" suspected VC by shooting around them until ground troops could be heli-lifted in for positive identification. The Australians were particularly strict on this matter. To take a typical example from the operational records, in February 1970, a "people-sniffer" got a high reading in a free-fire zone, where normally any Vietnamese could be shot on sight. The Bushranger sighted 15 people, but, instead of rocketing them

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forthwith, the pilot held them until ground troops were able to identify them all as fishermen, women, and children--not VC.

The squadron commander used the incident to emphasize once again to his men (1) the value of Bushrangers for holding suspects and (2) the "absolute necessity for positive identification before engaging human targets"--even in free-fire zones.^{31/} When questioned further about these policies, the RAAF Australian Force, Vietnam (RAAFAFV) Air Staff Officer confirmed that^{32/}

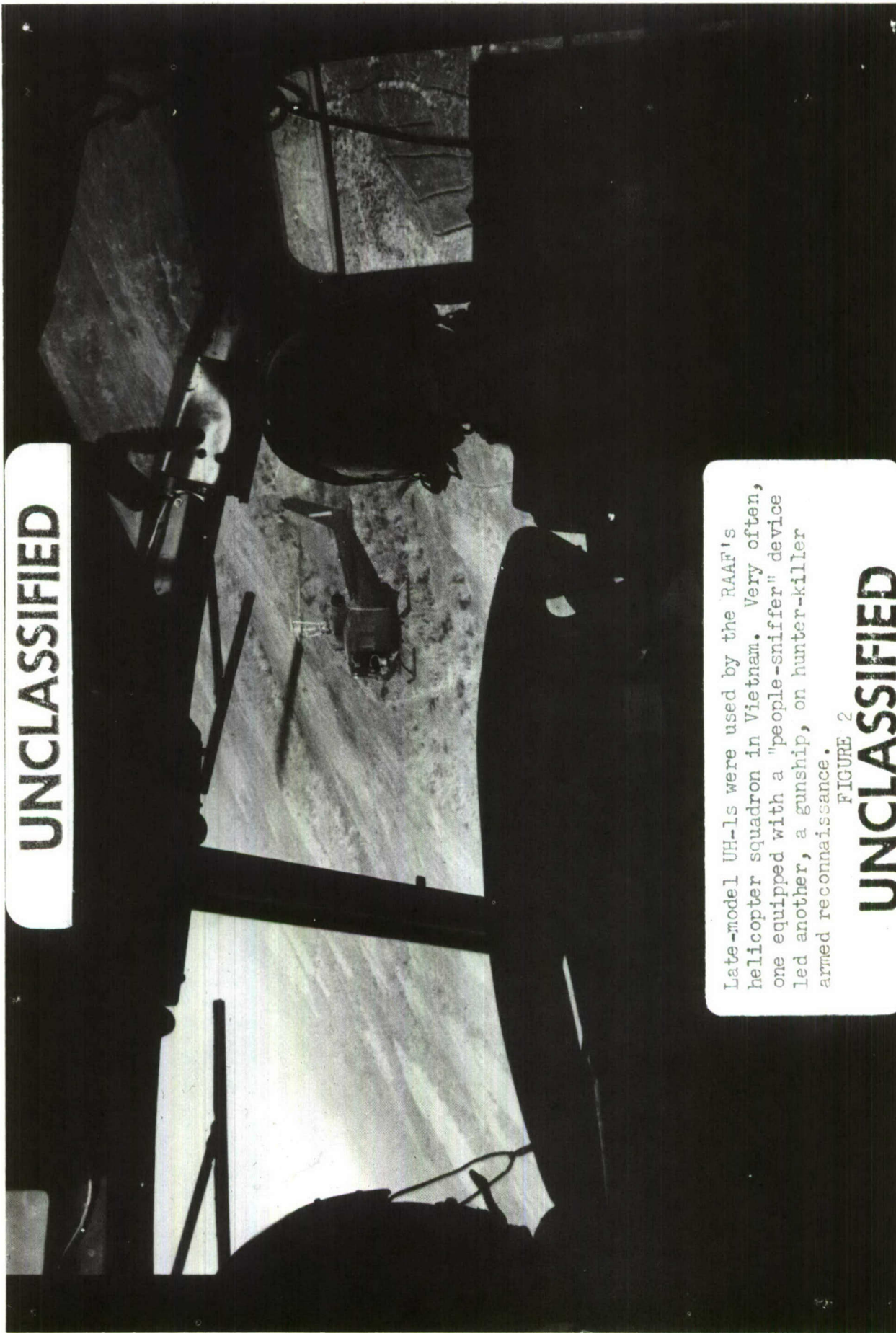
...our policy is more stringent on this sort of thing than MACV directives for free-fire zones. It's a matter of general philosophy. We don't want any unnecessary killing of people and alienation of the population.

Despite the caution, the sniffer-Bushranger combination accounted for a sufficiently large number of enemy killed and captured to encourage the task force to continue it as one of its more productive missions (See Figure 3). For their work, the Bushrangers used M-60 machineguns, mini-guns, and rockets with 17-lb. heads or flechettes (See Figures 4 and 5).^{33/}

In addition to the "people-sniffer" armed reconnaissance and classic gunship roles in covering the combat assaults of airborne troops, the Bushrangers provided cover for insertions and extractions of behind-the lines Army commandos called Special Air Service teams, and were used to cover "dust-offs"--the evacuation by helicopter of wounded troops--and to cover the insecure last lift of troops from an area (See Figure 6). One

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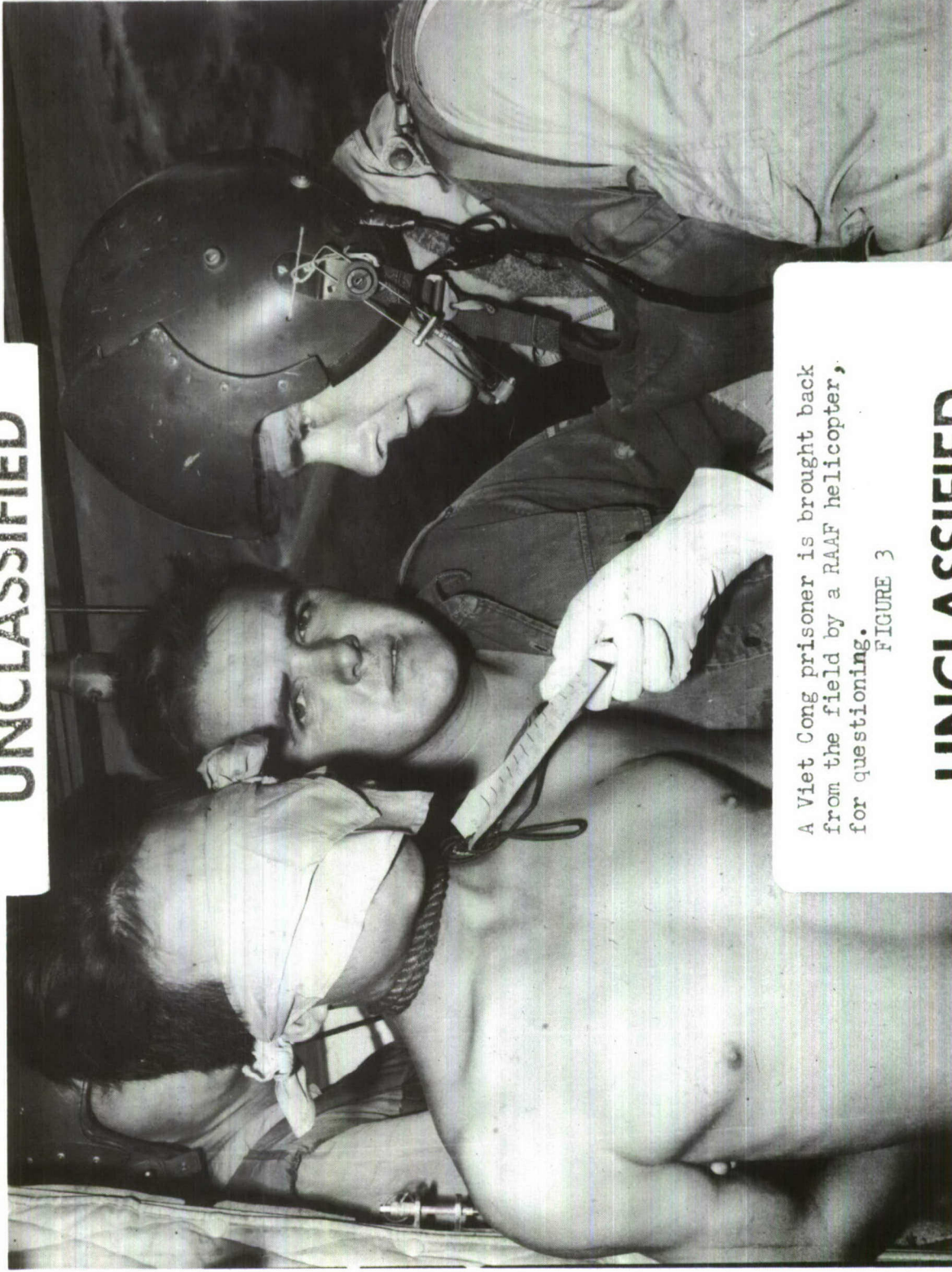


Late-model UH-1s were used by the RAAF's helicopter squadron in Vietnam. Very often, one equipped with a "people-sniffer" device led another, a gunship, on hunter-killer armed reconnaissance.

FIGURE 2

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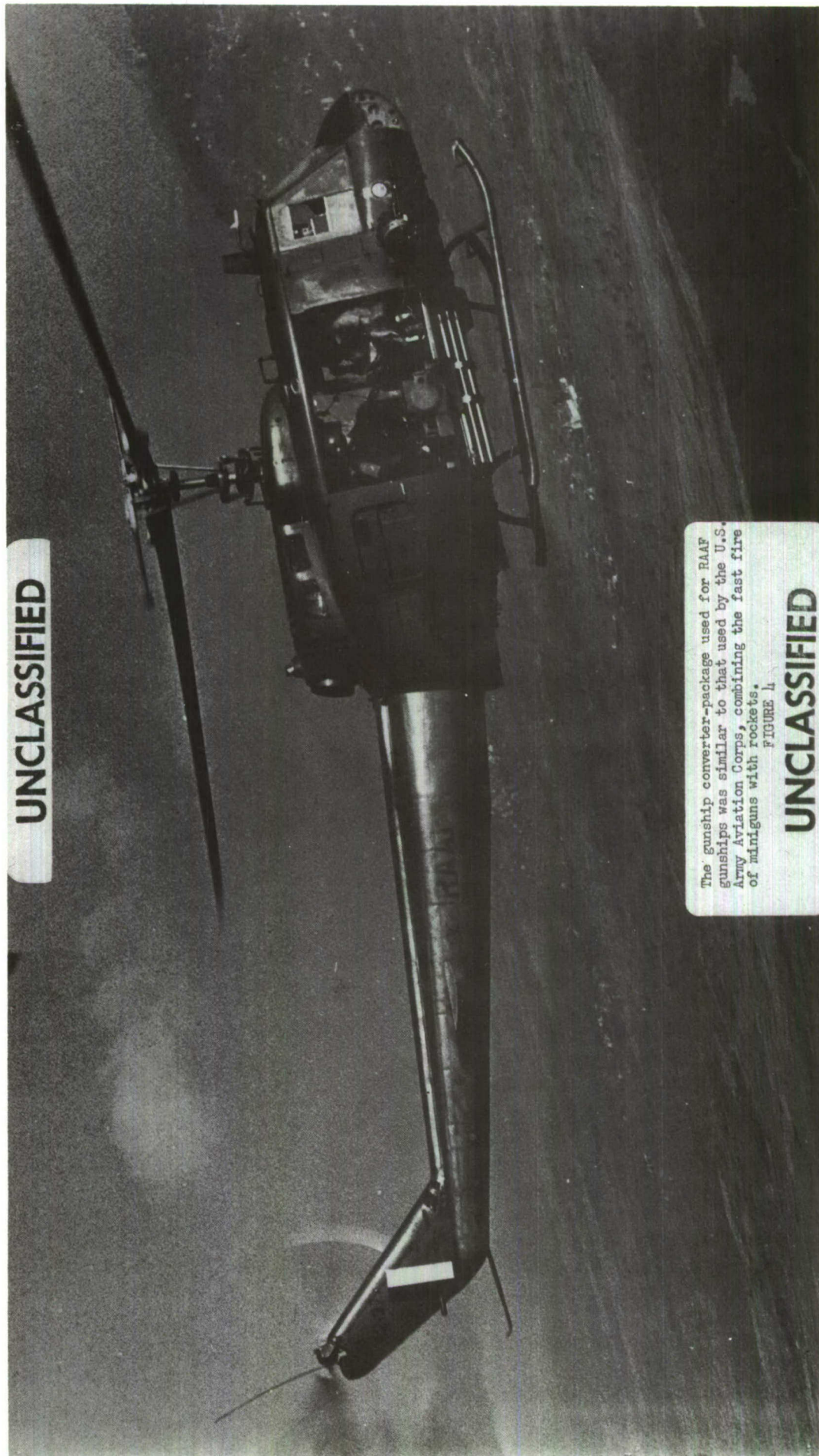


A Viet Cong prisoner is brought back from the field by a RAAF helicopter, for questioning.

FIGURE 3

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The gunship converter-package used for RAAF gunships was similar to that used by the U.S. Army Aviation Corps, combining the fast fire of miniguns with rockets.

FIGURE 1

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Ground crewmen of the RAAF's Vietnam helicopter squadron prepare to load armament at a forward staging area.

FIGURE 5

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"Dust off" missions--bringing back the wounded--were among the principal jobs of the helicopter squadron.

FIGURE 6

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two-aircraft light fire team was (in mid-1970) usually on immediate alert at the Nui Dat task force headquarters, with a third gunship and crew on 15-minute alert, as back-up, at Vung Tau home base.^{34/}

Other missions that occasionally fell to No. 9 Squadron included the spraying of crops with herbicide and the rescue of downed aircrews. As of mid-1970, all crews rescued were USAF, since no RAAF aircraft had been shot down. A typical rescue which occurred in July 1969 was the subject of a thank-you letter from the USAF unit to which the downed aircraft belonged. A U.S. FAC in an O-2 took a hit that caused him and his passenger to bail out over the Long Hai Mountains in "extremely hostile terrain." This was Australia's tactical area of responsibility, and three RAAF helicopters were the first on the scene, carrying Army troops. Meantime, a gunship gave them cover while the troopers descended to look for the O-2 crew, found them, and hoisted them up out of the grasp of the VC.^{35/}

The same month, July 1969, No. 9 Squadron received \$30 from C Company of the 9th Royal Australian Regiment to buy ale for the crews of the helicopters "who helped them out of a nasty situation." After losing one killed and eight wounded at the hands of a VC unit surrounding them, the "Digger" troops, out of ammunition, were relieved to see the unit dispersed by the arrival of Bushrangers and medevac helicopters.^{36/} Following procedures similar to those of the U.S., "Digger" troops often found themselves delivered to a hospital within 30 minutes of being wounded,

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according to the Royal Australian Army's press officer in Vietnam. ^{37/}

In January 1970, No. 9 Squadron adopted a new tactic: ^{38/}

. . . the Hawk Flight operation (somewhat scaled-down US Eagle Flights), designed to provide ready response to "hard" intelligence of small-unit enemy concentrations. The Hawk Flight comprises one platoon, including a mini-team from No. 1 SAS, ready to be deployed at 30 minutes notice by four UH-1H aircraft, and escorted by a heavy fire team, the method of insertion being an amplification of the proven [Army] Special Air Service long-range reconnaissance technique.

MATERIEL

Under Australia's military working agreements with MACV, the U.S. Army in Vietnam furnished spare parts for No. 9 Squadron at the rate required to keep up stock levels at Vung Tau, or as requested. The same agreements provided for immediate replacement of destroyed aircraft as well. In both cases, the RAAF was billed for goods received. ^{39/}

A look at RAAF records reveals many references to supply problems and difficulties in obtaining spare parts and components from the U.S. Army in Vietnam (USARV), especially during the period following No. 9's deployment. In some cases, these difficulties hampered normal helicopter operations, as for instance in August 1966 when the squadron needed consoles for its command-and-control aircraft, and armored seats for all its choppers. The spirit in which these problems were endured is indicated by this passage from a later report to RAAF-V headquarters in Saigon:

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USARV support in some cases still leaves a lot to be desired. The reasons, however, are that the US build-up has stretched their own resources to the very limit. There is never the slightest hesitation, at any level, in promising something--the difficulty is in fulfilling the promise.

More complimentary to the U.S. is this one: ^{40/}

USARV's good intentions, as well as their peculiar methods of spares supply control, were well-illustrated by this case of satisfaction of one of No. 9's AOGs [Aircraft On Ground, or in USAF terminology, NORS]. When the rotor blades of [aircraft No.] A-2041 were damaged by the emergency evacuation of ARVN wounded, 9 Sq. advised RAAFHQAFV of a requirement to have the aircraft serviceable again for a special task 36 hours later. SOE [Staff Officer, Equipment] visited USARV Air Materiel Management Center immediately, only to be told that six U.S. AOG demands had been converted to "Red Ball" requisitions for supply from CONUS that morning. The No. 9 Sq. requisition had not, at that stage, been received by AMMC. However, on presentation of our case for urgent supply, a master sergeant was assigned to accompany SOE to the Army dispatch area. A blade was located, addressed and consigned to 1st Air Cav, against an AOG demand outstanding several days. The address was altered to 9 Sq., the necessary paperwork altered, and a 35 Sq. Caribou collected the item for delivery to Vung Tau two hours later. A very satisfactory result for No. 9 Sq.; but whether 1st Air Cav's requisition has yet been satisfied is not known.

All maintenance including retrofitting, modification, and depot-level ^{41/} maintenance was done at Vung Tau.

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CHAPTER IV

THE BOMBING MISSION

The third RAAF squadron to be contributed by Australia to the Allied effort in SEA was No. 2 Squadron, composed of Canberras, (similar to USAF B-57s)--a unit already well known in Australia (See Figure 7). It had been formed in 1916, was the first RAAF unit to engage the enemy in World War II, and had received a U.S. Presidential Unit Citation.^{42/}

Its tour in Vietnam did nothing to diminish its glamour. The squadron accumulated a total bomb-damage record as of mid-1970 that was not only the highest in the USAF 35th Tactical Fighter Wing, to which it was attached for operational control, but was in fact the highest of any unit in SEA, without its having lost an aircraft or having a single airman wounded or lost in combat.^{43/} This was, in large part, owing to the different bombing techniques and equipment used by the RAAF Canberras, as will be seen later (See Figures 8 and 9).

Its eight aircraft and 300 men arrived in April 1967 at Phan Rang AB 165 miles northeast of Saigon, in Ninh Thuan Province, Military Region 2.^{44/} Three years later they had struck over 9,000 targets and dropped over 50,000 bombs (See Figure 10). The squadron had an exceptional record for accuracy and for consistently maintaining its planes with an in-commission rate of 98 per cent--much higher than the USAF standard.^{45/} Brig Gen W. T. Galligan, who had formerly commanded the 35th TFW, said, "I can't speak highly enough of their outstanding professionalism, across the board. I

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The Canberra, similar to the USAF B-57, was the RAAF's strike aircraft in Vietnam. All Canberras were grouped into a RAAF squadron at Phan Rang AB under the operational control of USAF's 35th TFW.

FIGURE 7

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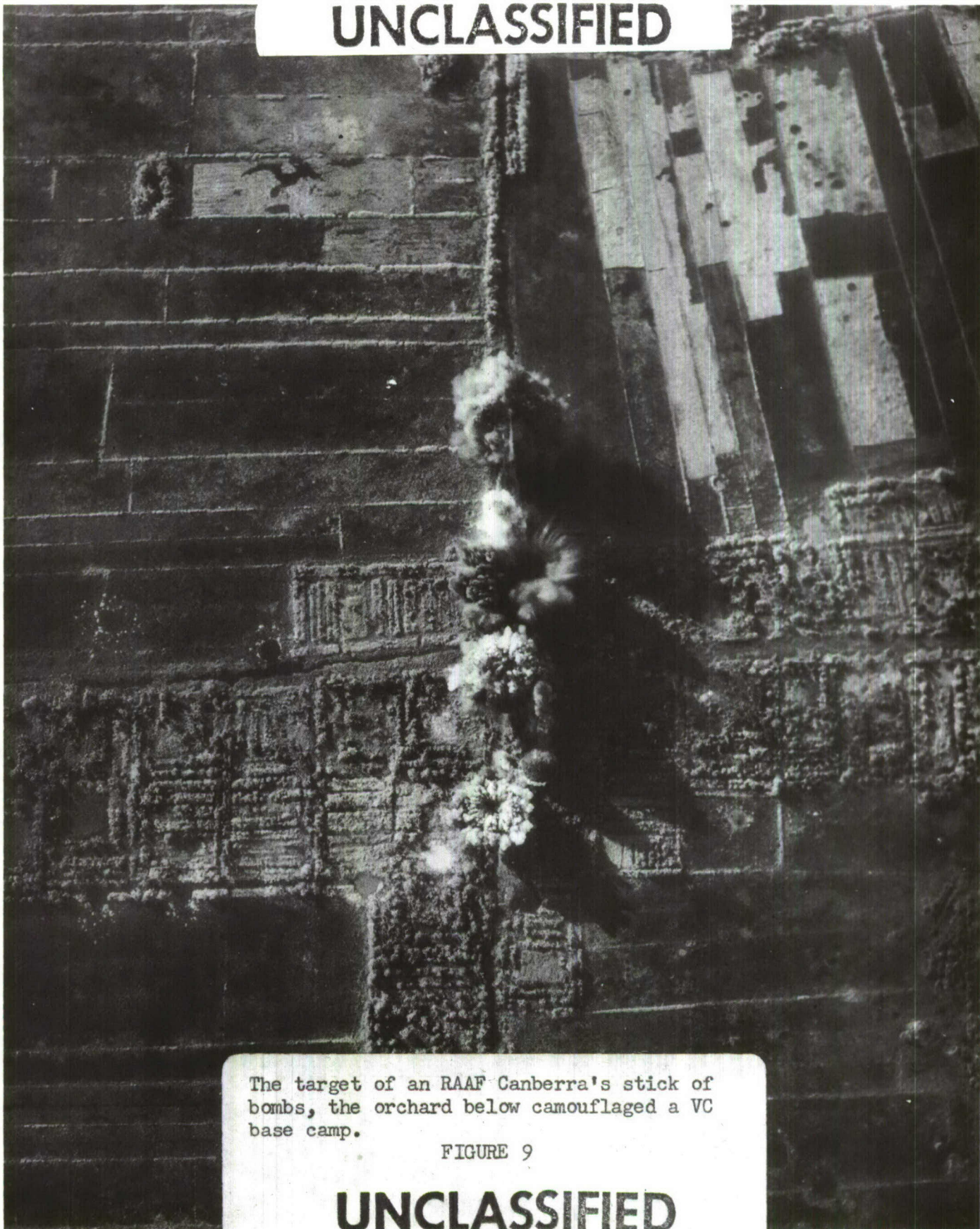


The Canberra was employed mainly in Military Region 4, a generally flat area, where its ability to drop sticks of bombs along a line feature with high precision gave it the highest average BDA in Vietnam.

FIGURE 8

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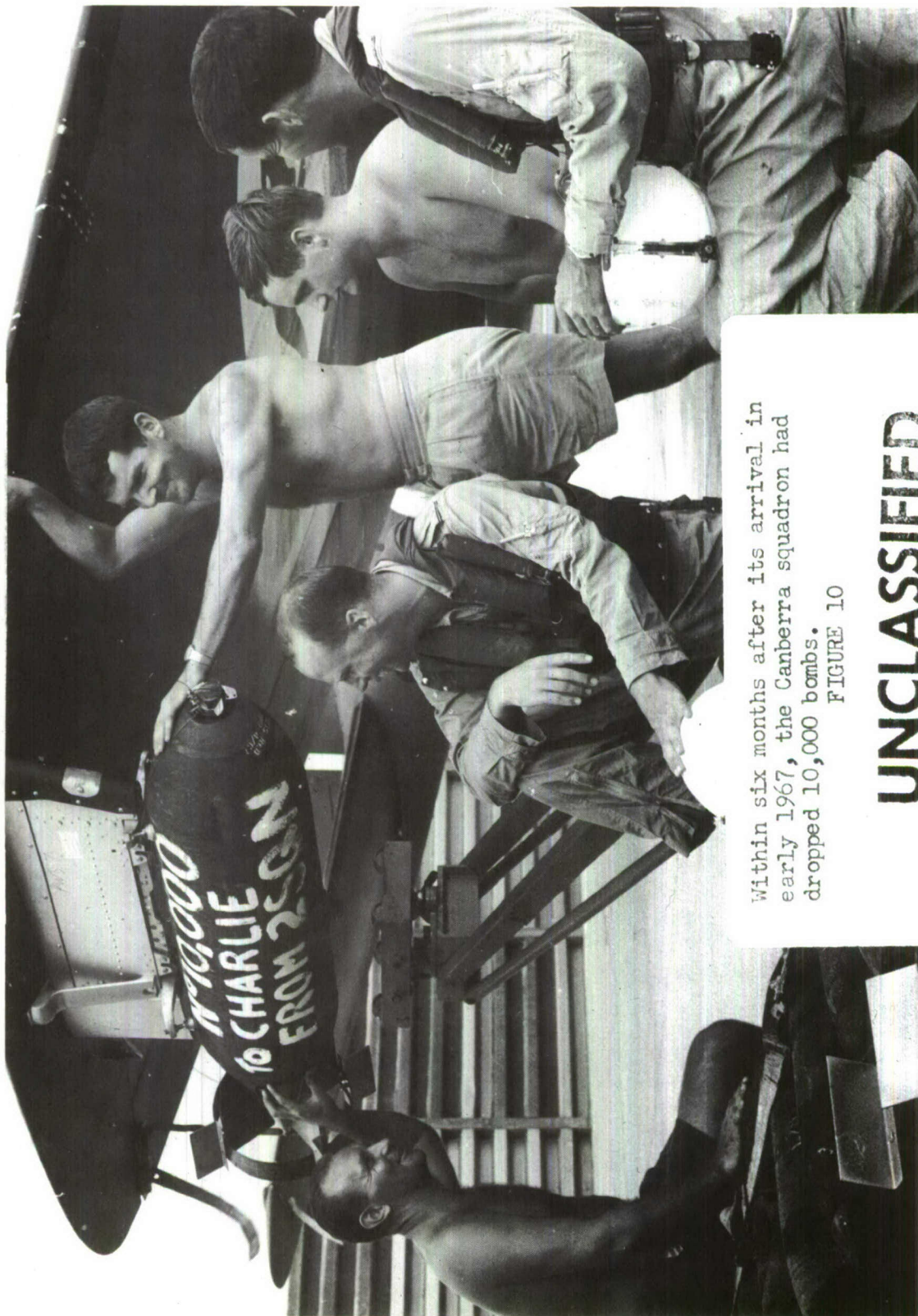


The target of an RAAF Canberra's stick of bombs, the orchard below camouflaged a VC base camp.

FIGURE 9

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Within six months after its arrival in early 1967, the Canberra squadron had dropped 10,000 bombs.

FIGURE 10

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only wish that all USAF units could do as well."^{46/} For July 1969, No. 2 Squadron was credited with 58.8 per cent of the 35th TFW's total BDA.^{47/}

This wing had four F-100 squadrons besides No. 2. In 1968, with only five per cent of the wing's total number of sorties, it continually accounted for 16 to 20 per cent of the BDA.^{48/}

BOMBING MODES

Notwithstanding what the foregoing might lead one to conclude, it was actually several years before the RAAF Canberras finally came to be used in the way best suited to their capabilities. After they first arrived in April 1967, they were fragged entirely for night missions, in which they used TACAN and transponder beacons to some extent, but mainly Combat Skyspot radar aids for acquiring the targets. This was in keeping with the conventional 7AF techniques for USAF B-57s and similar aircraft. The new Australian pilots were first taken on missions with USAF pilots in two-seated F-100s for their introduction to these radar aids, and, even then, 7AF and MSQ-77 (Combat Skyspot) radar operators had already begun to speak highly of "the skill and accuracy of flying by the No. 2 Squadron crews."

The USAF B-57s were then used primarily in the dive-bombing mode.^{49/} These aircraft, however, were differently configured from the RAAF Canberras. Made under license by Martin, they were actually a development rather than a copy of the original Canberra manufactured by British Electric.^{50/} The model produced by Australia, also under license, was more an exact copy of the British model, differing only in minor respects.

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It had a World War II bomb sight, which was connected to a doppler navigational aid. Drift and ground speed were computed by the doppler system and automatically fed to the bomb sight; while target altitude, bombing height, and bomb ballistics were manually set. With these inputs to the bomb sight, the Australian Canberra was capable of extreme precision on straight and level runs. All that was required were accurate flying by the pilot and accurate tracking of the target by the navigator.^{51/} It was, therefore, ideal for daytime strikes over flat country, especially where the targets lay in a straight line, such as tree lines, canals, and bunkers. Under target conditions like these, with a long loiter time and the possibility of using evasive tactics before coming into range of the target, the RAAF Canberra could accomplish in one pass what other strike aircraft required up to six passes to achieve, at the same time taking fewer hits from ground fire. RAAF training for bombing, moreover, had always been based on such techniques.

USAF B-57s did not have the same equipment. Their pilots, as well as those of other USAF fighter-bombers, had to start at altitudes like 10,000 feet, track the target, compensate for wind, and keep their attention on other matters during the dive. As a result, their accuracy could not be as great as the Australians'.^{52/}

It was easy to distinguish the USAF B-57 from the RAAF's: the American version had a black nose, housing electronic gear, while the RAAF Canberra had a glass nose. Before the bomb run, the RAAF navigator climbed

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forward into the nose to operate the bomb sight, in a procedure reminiscent of World War II. (The only USAF aircrews in SEA who used level bomb runs were the SAC B-52 crews.) The USAF B-57s were used primarily for interdiction in Laos, where the RAAF Canberras could not be sent because of country-to-country agreements restricting their activity to South Vietnam. Neither version was versatile enough to be used to any extent for the support of troops in contact, except when nothing else could be diverted to the troops' area.^{53/}

For the first six months after their arrival in 1967, the RAAF B-57s did not fly a single day mission under FAC control. Not only did this policy prevent the pilots from realizing their potential, but it also stifled morale, because the MSQ night missions gave them little BDA feedback. Even the 35th TFW commander suggested that their call sign be changed to "CANDLE LIGHT," a joking thrust at both the Canberras and the B-52 ARC LIGHT missions. Then, in September 1967, a few day missions with FACs were tried.^{54/} Morale and results immediately went up. As a result, over the succeeding years the night missions were gradually dropped, until, in 1970, the MSQ missions were flown only when weather conditions prevented visual acquisition of targets.^{55/}

The transition was not a rapid one, and, even then, such changes as occurred were chiefly attributable to the efforts in 1967 and 1968 of the last RAAF Wing Commander Tony Powell, who had flown 700 hours as a FAC with the USAF. He had also been Deputy Director of the USAF Direct Air Support Center (DASC) Alpha before becoming Commander of the USAF Tactical

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Air Control Party (TACP) attached to the Australian Task Force headquarters. Being intimately familiar with their capabilities, he plumped for having the RAAF Canberras assigned to daytime missions.^{56/} This was accomplished in the main through arranging for DASC, TACP, and FAC personnel to visit No. 2 Squadron for briefings on the RAAF Canberras' characteristics and to fly missions with them. At the same time, No. 2 Squadron personnel flew with FACs and visited DASCs and TACPs.^{57/}

The 35th TFW commander supported this program of exchange visits, and out of it grew the increased number of day missions for the RAAF (plus a greater RAAF understanding of what 7AF was trying to accomplish with its tactical air operations). As the BDA reports became more frequent and detailed and the results of using the Canberras in level runs over flat terrain in the daytime became known, RAAF morale soared even further, creating an outstanding esprit within the squadron and a desire each month to better the previous month's bombing accuracy and BDA. In December 1967 the No. 2 Squadron commander wrote to his higher headquarters:^{58/}

Perhaps the most notable achievement for the squadron for the month is the consistent accuracy of our visual bombing. It is believed that accuracy now being achieved exceeds significantly that previously attained by Canberra aircraft. In a high percentage of cases, bombs are right on target and called as direct hits by the FAC. Maximum error expected is less than 60 feet. . .

The present accuracy is obtained by extremely accurate flying (developed to a large extent in night Combat Sky-spot operations) and a close and constant supervision by squadron executive officers. When a bombing error in excess of 60 feet is reported, the crew is debriefed in detail, in order to determine the cause of error. If it does not seem to be crew error, then the whole aircraft bombing system is checked meticulously, even though it may

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appear to be completely serviceable. In this way the most minute errors in the bombing system have been discovered and corrected at the earliest possible stage. . . .FACs have frequently expressed surprise at the accuracy of our bombing. Furthermore, our ability to deliver bombs singly, in pairs, or in sticks of variable length, and our endurance capability in the target area are only now being realized. It is hoped that full appreciation of our capability will result in an even wider range of target assignments.

This report is quoted at length because of what it reveals--the intensive program to have the best bombing record, the pride and esprit of the squadron, and the desire to have more daytime missions.

Ultimately this desire was realized, to the benefit of all concerned--except Communist troops. Two years later, the Australian Canberras were being fragged almost entirely for day missions, most of these in the Delta. The RAAFAFV's monthly report of October 1968 says:

As a result of our campaign to educate 7AF and FACs on the capabilities of Canberras, much better targets are being allocated to the squadron. The majority of targets allocated are in southern III Corps and IV Corps, where stick bombing is particularly effective on line targets such as canal banks and tree lines. The results of missions have improved significantly. . . .In five months, KBA almost doubled to 524.

No. 2 Squadron thrived on BDA reports, their documents would suggest. Its men wanted to see how they were doing, and a competitive spirit can be detected. A study of squadron documents from 1967 to 1970 shows frequent disappointment and irritation at the "meagre" amount of BDA reports they

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were able to receive from 7AF.^{59/}

WHERE THEY BOMBED

By 1969, about 70 per cent of the Canberras' missions were being fragged into IV Corps, where their characteristics could be best used and where there was the least ground fire. In areas of known antiaircraft danger, they flew at 3,000 feet, but their bombing altitude could be as low as 1,000 feet.^{60/} When dropping bombs fitted with variable-timing fuzes, the Australian Canberras normally adopted altitudes between 4,000 and 5,000 feet to allow for different weapons/fuze characteristics. In January 1969 the Australians asked 7AF to let them use Combat Skyspot techniques experimentally in the Delta in the daytime, in order to give the enemy less warning of raids and catch him out in the open, but it was 7AF's policy to employ this system only at night or in bad weather.^{61/} The Canberras gave best results in the Delta because of that region's flatness and the fact that the altitude of the target--almost always just a few feet above sea level--could be fed into the bombsight with precision.

In early 1970, when the Communists began building more roads and moving larger amounts of supplies into I Corps, a mountainous region, advantage was taken of the accuracy of the RAAF Canberras for practically the first time to cut roads so that USAF gunships could destroy the trucks thus immobilized. During this period, No. 2 Squadron's sorties were largely divided between IV and I Corps, and a little trouble in getting exact target altitudes from the FACs in these mountain regions was reported. Only in the case of the Canberras was this matter of altitude of crucial

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importance, compared with the other aircraft the FACs were experienced in controlling. Furthermore, the altitudes shown on the charts being used were often inexact.^{62/} Nevertheless, according to RAAF records:^{63/}

*. . . bombing accuracy figures are up despite the fact that 33 per cent of the missions are being flown in I Corps with target heights of up to 3,000 feet and often target heights as relayed by FACs are in considerable error. . . . Although the BDA obtained in I Corps appears meagre, it represents better than one road interdicted per aircraft sortie into the area.**

USAF AND VNAF FACs

Because of difficulties with new FACs or with those having no experience with the different way that RAAF Canberras worked, the exchange program mentioned earlier had to be a continuous one. The RAAF squadron commander said in February 1970:^{64/}

The squadron is concerned about the number of sortie cancellations [10] which occurred during the latter part of the month. While some of the cancellations resulted from poor weather conditions, it is considered that there was a reduced sense of urgency on the part of control agencies. This impression may be false; nevertheless a close watch is being maintained on the situation. In some cases, sortie cancellations were due to the failure of FACs to appreciate the low-level bombing capability of the Canberra. In general, FACs are attuned only to the capabilities of fighter aircraft and do not realize that the Canberra can operate to finer tolerances in poor weather conditions. Whenever possible, squadron aircrews attempt to inform the FACs of the lower limitations under which the Canberra can operate. However, it has been impressed on the aircrews that no lowering of the safety standards will be tolerated.

*Underscoring by CHECO author.

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Later, VNAF FACs were encouraged to enter the FAC exchange program; for under Vietnamization programs they were replacing USAF FACs who were redeploying to the U.S. The No. 2 Squadron Commander in April 1970 said that there were

. . . more complaints about VNAF FACs not wanting to operate when ceiling, even scattered, is less than 2,000 feet. We hope that close liaison with FACs will eliminate the problem.

Later that month, VNAF FACs from IV Corps for the first time began to visit the squadron. Soon afterwards, the RAAF reported that their efficiency had improved markedly; however, communication between FACs and aircrews remained difficult. ^{65/}

Those FACs who were able to work frequently with the Canberras learned to take advantage of their peculiar characteristics. The RAAF reported this to headquarters in Australia: ^{66/}

The average sortie length has again increased slightly but this seems unavoidable. The aircraft's long endurance has proved a most useful feature, and FACs tend to hold Canberras and use them when shorter-endurance aircraft are not immediately available.

Beyond the exchange visits and practice in working with VNAF FACs, the RAAF had little to offer the program to Vietnamize the air war--unlike 7AF, which was deeply involved in training programs with the VNAF. It seemed likely in mid-1970 that as Vietnamization progressed, the RAAF, Canberras would be among the first units to redeploy. The No. 2 Squadron

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commander said in early 1970: ^{67/}

The squadron believes it has accomplished the "Vietnamization" of its missions to IV Corps very successfully, and feels confident it could operate entirely with VNAF FACs without loss of accuracy. However, its efficiency and rate of utilization is likely to suffer as a result of the unreliability of the VNAF FAC organization. On a number of occasions during the month, squadron aircraft, after failure of the VNAF FAC to rendezvous, were diverted to secondary targets in III Corps.

SHRAPNEL DAMAGE

Another minor problem encountered by No. 2 Squadron resulted from the low bombing altitudes it favored. The squadron in mid-1970 had yet to suffer a combat loss in men or aircraft, but on several occasions shrapnel from their own bombs had almost accomplished the VC's purpose. In August 1969, the RAAF's Department of Air had directed the squadron to increase its minimum bombing altitude from 1,000 to 1,200 feet. Even so, shrapnel hits remained one of the RAAF Canberras' greatest sources of danger, as this battle-damage report attests:

On the 11th of March [1970] and again on the 16th of March, aircraft received shrapnel hits from their own bombs. On the first occasion, the aircraft was bombing at 1,200 feet above ground level, due to low cloud in the target area, and executed a pull-up escape maneuver after bomb release, and, on the second occasion, the aircraft level-bombed at 2,000 feet above ground level, due to low cloud in the target area.

As a result of these incidents, the minimum height for level bombing without a pull-up escape maneuver was further increased to 2,400 feet

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above ground level.^{68/} Part of the cause for this damage from bomb fragments was that RAAF bombing techniques had originally been worked out with Australian bombs, but during the winter of 1968-69 No. 2 Squadron began drawing M117 bombs from U.S. theater stocks. The 750-lb. M117, much more streamlined than the Australian 500-pounders, reached the ground sooner, where it exploded both closer to the escaping aircraft and with greater velocity.^{69/}

VARIABLE-TIMING FUZES

In contrast to the RAAF's success in being allowed to use their day-time, visual, level-bombing techniques instead of MSQ bombing at night, their fight to use variable-timing fuzes on the 750-lb. and 1,000-lb. bombs, which the RAAF waged for a year, ended in defeat and a total ban on these fuzes for B-57 aircraft. The testing was carried out primarily by 7AF's B-57 squadron, and this unit came to the conclusion that the fuze was unreliable and dangerous, often causing 100 per cent early explosions and non-explosions.^{70/} A RAAF report from the same period, late in 1968, said, "It was found by fitting the delay fuze in the nose of the bomb [and the variable-timing fuze in the tail] almost 100 per cent reliability was regained."^{71/}

Nevertheless, after a futile campaign of briefing the USAF Tactical Air Control Center (TACC) personnel and Army personnel from the field, the RAAF finally dropped the matter altogether and settled for the standard instantaneous fuze used by other, similar 7AF strike aircraft.^{72/}

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The RAAF Canberras normally carried a combination of six 750-lb. and 1,000-lb. general-purpose bombs, four in the bomb bay and one on each wingtip.^{73/}

MAINTENANCE

With the inactivation in October 1969 of the USAF 8th Bomb Squadron at Phan Rang AB, the RAAF No. 2 Squadron became the only unit with B-57 type aircraft remaining in SEA in mid-1970, although the 460th Tactical Reconnaissance Wing at Tan Son Nhut AB was still equipped with RB-57s.^{74/} During 1969, No. 2 Squadron flew 2,862 missions--an average of 7.8 a day--with just eight possessed aircraft at any one time, including those in maintenance at Phan Rang. Moreover, many of the missions which were aborted were the victims of adverse weather.

In mid-1970 the average daily sortie rate for each aircraft was up to 1.1--the eight Canberras were flying nine missions a day, each one lasting an average of two hours. The in-commission rate, as mentioned before, was 98 per cent. This improbable in-commission rate, with all aircraft flying every day, becomes more plausible when the RAAF's maintenance system for B-57s is understood. All minor maintenance and inspections up to the 250-hour periodical check were done at night at Phan Rang, allowing all eight aircraft to fly again the next day. Then, for the 250-hour periodical, the aircraft were sent to Singapore--one aircraft arriving at Phan Rang to replace the one departing, so that the number of aircraft possessed remained the same at all times. For IRAN after 2,000 hours, they were sent to Australia.^{75/} Since spare parts for the Canberras came from Australia by RAAF C-130, with occasional periods of up to 10 days between

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scheduled flights, parts management and stock levels were given close
attention by RAAFAFV Materiel officers. ^{76/}

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CHAPTER V

THE AIRLIFT MISSION

The U.S. build-up of forces in Southeast Asia (SEA) following the Tonkin Gulf incident began in August 1964. The same month, Australia sent its first aircraft to Vietnam. Three C-7 Caribou aircraft on their way from the Canadian DeHavilland plant for delivery to the RAAF received instructions when they landed for refueling in Malaysia to proceed instead to Vung Tau, RVN (See Figures 11, 12, 13, and 14). There they were to form the nucleus of RAAF Squadron No. 35, which was brought up to its complete strength of six aircraft before the month was out.^{77/}

The squadron's tasks, unchanged as of mid-1970, included the airlift of cargo, mail, and passengers, the dropping of paratroopers, evacuation and resettling of Vietnamese families--often with their household goods, dropping flares for night combat operations, medevac of battle casualties, and even the parachuting of cows into villages in support of the AID program.^{78/} Because of the RAAF squadron's esprit de corps and its willingness to push flying time and cargo loads to the limits, an official report to PACAF by the USAF airlift force commander in RVN soon after the squadron's arrival described it as a "very valuable augmentation to the SEA Airlift System. We have been most impressed with the professional airmanship of the Australian aircrews. The RAAF Transport Flight is a 'can do' outfit."^{79/}

From its arrival in Vietnam, No. 35 Squadron was fully integrated, operationally, into the USAF airlift system. It remained under the

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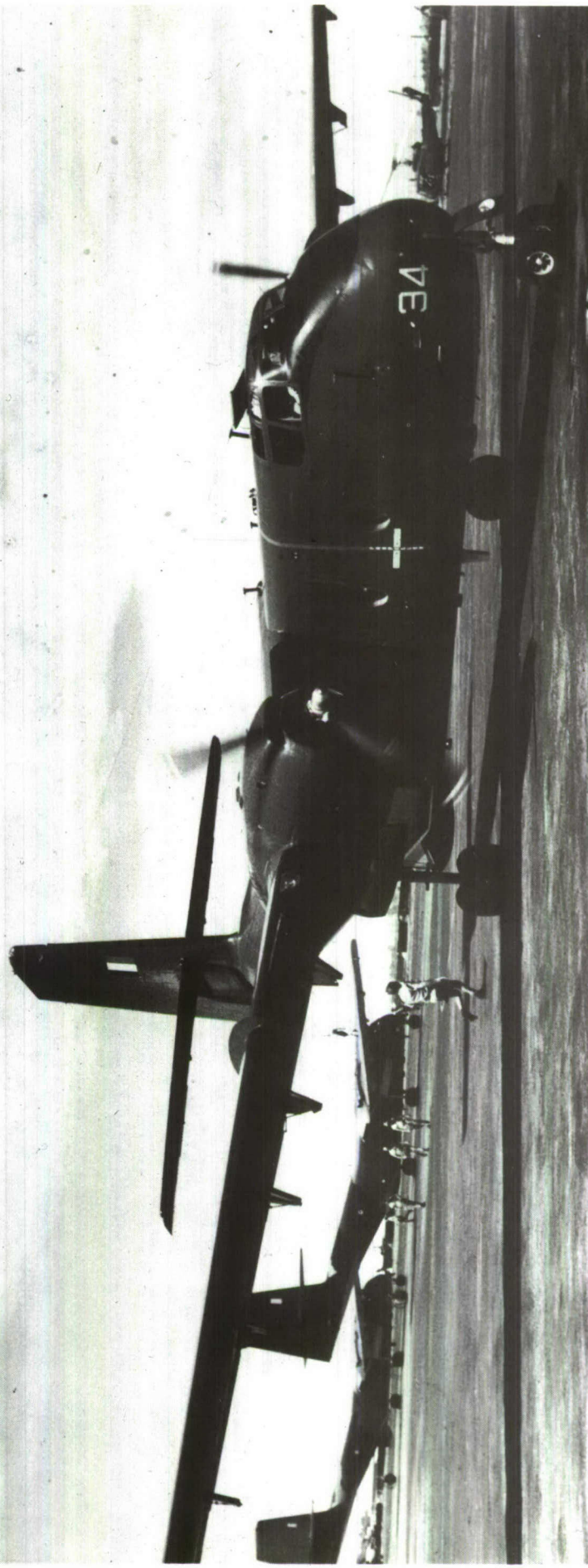
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Australian national command, as exercised through the Air Board, but operational control was given to COMUSMACV and further delegated to the AF element of MACV.^{80/} Until the creation of the USAF 834th Air Division (834AD), the Air Force controlled the squadron through the old 2d Air Division's 315th Air Commando Wing (later redesignated as the 315th Tactical Airlift Wing). Its tasks were divided between support of U.S. and Australian units, the greater part of which arrived in 1965 and 1966.

The C-7, as the USAF was later to designate the Caribou, possessed unique qualities which set it apart from the C-123, the C-130, and other regular transport aircraft in its ability to use shorter unimproved airstrips in forward battle areas. However, a countervailing, but not unnatural, disadvantage also derived from the very characteristic which made the Caribou's peculiar versatility possible: its smaller size meant that it could carry only much lighter loads. The RAAF C-7 aircraft presented an opportunity for the USAF to study these capabilities in detail and so to prepare for the assimilation of the 144 Caribous that it was to receive from the U.S. Army in January 1967. The advantage lay in the fact that the RAAF aircraft were under the USAF's direct operational control, which meant that they could have been used for the study under wartime conditions. However, in 1970 there was no evidence available at 7AF or 834AD to indicate that any such formal study had ever been conducted. Instead, Seventh Air Force used studies and analyses of the C-7 carried out by the U.S. Army and DOD.^{81/} The trade-off by the chiefs

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Like so many other types of aircraft, the C-7 Caribou received its baptism of fire in the Vietnamese War, where it achieved a reputation for rugged dependability almost comparable to that of the C-47 in World War II.

FIGURE 11

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The RAAF was flying their version of the C-7 in Vietnam before this aircraft entered the inventory of the USAF.

FIGURE 12

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A kangaroo inside a circle was the Royal Australian Air Force's insignia, here seen above the heads of Aussie troops ready to embark for a flight to the forward area. The RAAF C-7s also carried Vietnamese civilians and military, and U.S. personnel.

FIGURE 13

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The RAAF found the C-7 Caribou, with its three-man crew, almost the ideal aircraft for operations from short, unimproved airstrips in forward areas.

FIGURE 14

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of staff of the Army and the Air Force which resulted in the Army's getting helicopters and the AF's acquiring C-7s had been agreed upon in April 1966, but it was not until eight months later that the actual transfer took place. Although AF personnel were in the meantime trained in C-7 operations at Sewart AFB, Tennessee, it was not war-zone experience. ^{82/}

In June of 1966, after the Army-AF agreement, the commander of the RAAF contingent in Vietnam reported to his higher headquarters in Canberra, Australia, that the approaching turnover of Caribous to 7AF appeared to present no problems for the RAAF transport squadron. Later, though, he was to admit that he had been wrong. ^{83/} The majority of the Army's 144 Caribous were in Vietnam, servicing those airfields--about 40 in number-- ^{84/} from which C-123s and C-130s could not operate. Like the Australian C-7s, they were the lifeline to Special Forces outposts and remote USAID projects (See Figure 15). ^{85/} Another similarity with the Army lay in the fact that the RAAF, in the words of its Vietnam commander in 1970,

flew the hell out of our aircraft. This is a war zone; so you have to be more flexible than you are at home. We have crew rest regulations too, but the crew is going to try to get the job done before they take their break.

The RAAF, however, managed the maintenance of its C-7s more strictly than the U.S. Army--here displaying a greater similarity to USAF methods. Compared with the Army's C-7s, those of the RAAF achieved a higher daily utilization rate (2.8 vs 2.4 hours), a higher average payload per sortie

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(1.6 vs 1.2 short tons), and a higher in-commission rate.* The RAAF, in other words, flew their Caribous harder and carried more tonnage with them, but still kept them in better shape.^{86/} Maintenance on the RAAF C-7s was performed by RAAF men at the Vung Tau home base, using spare parts bought from the U.S. Army, whose central depot was also at Vung Tau.^{87/} But when the USAF took over the C-7s, the RAAF commander reported back to Canberra that the spare parts situation had deteriorated seriously overnight.^{88/}

This decline was due to the transfer itself and to the differences between Air Force and Army standards of supply and maintenance.^{89/} The Army C-7 supply records which were turned over to the Air Force with the aircraft showed no usage figures for the stock levels. The stocks of spare parts themselves were transferred in bulk without vouchers and in some cases without identification.^{90/} Although squadrons were dispersed throughout Vietnam, the USAF established its C-7 wing at Cam Ranh Bay and centralized its C-7 parts depot there. During the period that this was being done, 7AF had to collect Army supply items from many different locations, causing a disruption of the supply process.^{91/} The RAAF commander reported to Canberra that his maintenance people were experiencing difficulties in keeping their Caribous properly serviced, owing to delays in receiving the spares they had requisitioned. At the same time he

*The figures in parentheses represent available data for a six-month period in 1966.

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High in the Annamite Mountains, a mountain-tribe family watches an Australian Wallaby (almost the same as the USAF Caribou) land with supplies for a Special Forces outpost.

FIGURE 15

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recognized that this was the result of the problems faced by the USAF in taking over the Army C-7 fleet in Vietnam.^{92/} A month later conditions had improved to such an extent that he was able to say that the "USAF supply system has in the main been able to meet our demands within a reasonable time."^{93/} The supply situation, and a comparison of utilization rates and average payloads for the RAAF Caribous with the USAF C-7s will be further dealt with below.

The use of RAAF C-7s varied little from 1964 to 1970, except that their scheduling became more regular as the management of the USAF's airlift system in SEA was refined, especially after the Air Force took over the Army's C-7s. Like the other transport aircraft managed by MACV's Traffic Management Agency and operated by the 834AD, the RAAF C-7s were given (1) common-service runs, (2) missions that were dedicated to specified units, and (3) special one-time missions, including emergency runs.^{94/} The pattern tended toward having the C-7s fly special missions and be more responsive to the day-to-day needs of Army commanders, much like dedicated aircraft.^{95/} The common-service missions assigned by the 834th's Airlift Control Center brought the RAAF C-7s into wider, more varied support of such agencies as the U.S. Navy, Marines, the RVN armed forces, Korean forces, and MAC-CORDS,* as well as their old customers--USARV, 7AF, the Australian forces, and USAID.^{96/}

*Military Assistance Command Civil Operations and Revolutionary Development Support.

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Since the airlift system was an integrated one, RAAF aircraft regularly carried U.S. cargo and passengers, and U.S. aircraft regularly carried loads for the Australians. In 1968, during a typical month, the RAAF Caribous flew 99 hours in support of Australian forces and 221 hours for U.S. units.^{97/} The apparently disproportionate amount of support for their own small forces was actually in the interests of management efficiency, since the Australian units were, for the most part, located near the Caribous' home base at Vung Tau. In July 1970 the percentage of this support had risen to 45 per cent from the 33 per cent of 1968. (In both cases, what does not show up in the figures is the amount of unscheduled cargo that RAAF aircraft picked up at Tan Son Nhut AB when coming back to Vung Tau empty after a common-service run.)^{98/}

Although Australia made its contribution of transport aircraft before its main body of ground troops arrived, with the understanding that they were to support American and Vietnamese forces, it should surprise no one that the RAAF transport personnel preferred to support their own troops and flying units. In an official sanction of this patriotic predilection, MACV's memorandum of understanding with the Chairman of Australia's Chiefs of Staff Committee later stated, "...priority of use of No. 35 Squadron resources will be made available to the Australian Task Force to the maximum extent practicable."^{99/} The RAAF commander in Vietnam reported to his higher headquarters in November 1969:^{100/}

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A pleasing addition to No. 35's tasks was the employment of the Caribou in direct support of the [Australian] Task Force, redeployment and resupply of forces in the field being effected on four days of the month. This type of operation, beneficial to the Caribou crews, has been commented upon favorably by. . . 1ATF and will continue to be actively encouraged by this headquarters.

Actually, it was fully recognized at RAAFAFV headquarters that the Allied effort in Vietnam was a unified one and that it was the tactical war situation which determined the air requirements.^{101/} In March 1969, for instance, the Australian Task Force deployed from its usual area of responsibility, took up positions to defend the Long Binh-Bien Hoa complex from the east, and performed reconnaissance in force in Long Khan Province. During this time, No. 35 Squadron's operations were concentrated on the resupply of U.S. Army units in III Corps.^{102/} A daily mission to Long Binh was added to the squadron's regular runs, which resulted in a 50 per cent increase in aircraft movement, 31 per cent more cargo, and 44 per cent more troops carried.^{103/} During the Tet Offensive of the previous year, the RAAF Caribous moved 428,907 pounds during a single three-day period, pushing the squadron's total cargo carried for the month of February over the million-pound mark for the first time.^{104/} When at one time--soon after the main body of Australia's ground troops arrived--some Australian officers suggested putting the Caribou squadron under the operational control of the Australian Task Force commander, the RAAF element objected, saying they preferred to remain under the control of 7AF. At the same time, 7AF said it would give priority consideration to any airlift needs the task force might have.^{105/} Over the years, it is interesting to note,

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the percentage of missions in support of the Australian Task Force rose to 75 per cent of the squadron's total in 1970 (although, in terms of flying hours, as stated earlier, they comprised 45 per cent).^{106/}

In mid-1970, No. 35 squadron normally was tasked with four missions every day, but a fifth, special mission, could be given to the squadron if the Australian Task Force needed it. In addition, although the squadron's sixth aircraft was normally being serviced on any given day, it too could be assigned a "special mission" if the 834th needed it.^{107/} On a typical day, a crew could land at as many as nine or ten airstrips ranging from heavily defended air bases to temporary dirt strips,^{108/} the C-7 being the "main supply channel and, in reality, the lifeline of support" of the Civilian Irregular Defense Group and Special Forces camps.^{109/} A "special mission" could include, as it did in March 1967, dropping gasoline on forest regions in an attempt to start fires and thus depriving the Viet Cong of cover.^{110/}

The RAAF C-7s, being differently equipped from the USAF C-7s, were more difficult to fly in and out of the unimproved airfields. The following is a quote from the RAAF element commander's monthly report to headquarters in Australia in March 1969:^{111/}

For too long, No. 35 Squadron aircraft have been landing at forward airfields without radio contact with forces on the ground responsible for passing advice as to load requirements, airfield condition and alert state. It is disturbing to learn that before No. 35 Squadron aircraft are modified there will be a trial installation of FM radio equipment

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with more channels⁷ in Australia. All USAF Caribous in Vietnam are modified and we are sure the installation works.

Before the end of the year, however, the RAAF C-7s had the new FM sets, and the problem no longer existed.^{112/}

There was a period of approximately six months during which the RAAF noted a decline in the usefulness of certain daily common-service missions. The squadron's monthly report to RAAF Hqs for July 1969 said that^{113/}

it is becoming harder and harder to find useful employment for missions No. 7 001 and 002, the common-service missions. Both of these have wasted time tramping empty holds around the Delta looking for work, and the work found is often hard to justify as airlift cargo. Drums of fuel constitute the main cargo for the 002. It is rather monotonous work, shuttling over the same 20-mile leg all day, and there has been some rivalry among crews to see who can move the most. The peak was reached one day this month when one crew flew 23 sorties and moved 152 drums--35 tons of cargo!

(A year later this was bettered by a single RAAF C-7 flying 28 of these sorties in one day to move 207 drums of JP4 fuel, or 44 1/2 tons, in eight hours and ten minutes.)

No. 35 Squadron's report for September 1969 said that the "work available for (RAAF) Caribou aircraft in country has continued to decline."^{114/}

The first half of 1970, however, saw military transport needs in the southern provinces once again beginning to increase, and the two common-service missions there were considered by the RAAF in July 1970 to be

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more efficiently employed again.^{115/} During these first six months of 1970, as in the past, the loads carried remained consistently higher for RAAF C-7s than for those of the 834AD. The tons-per-operational-sortie figures averaged 1.88 for the RAAF, 1.11 for the 834AD.^{116/} There may be hidden factors here resulting from the ratio of dedicated-user to common-service missions in the two air forces, as shown for instance by the difference in the daily utilization rates per aircraft: RAAF 2.68 hours,^{117/} USAF 3.63. When the U.S. Army in Vietnam still owned the C-7s, the average Army payload was 1.4 tons per sortie.^{118/} During the same period, 1966, the RAAF daily utilization rate was 2.8 hours, while the Army averaged 2.4 hours. Again, in the matter of operational readiness (OR) rates, the RAAF figures were higher than those of the larger USAF C-7 fleet, composed of 80 aircraft in mid-1970, the January-to-June 1970 averages being 85.1 per cent for the RAAF, 81.8 per cent for the 834AD.^{119/} This was achieved despite the fact that No. 35 Squadron consistently overflew its allocated hours.^{120/}

The seemingly better operational and maintenance records achieved by the RAAF were explained in similar ways by RAAF and 834AD officials. The Air Commodore in charge of RAAFAFV was blunt and uninhibited by considerations of diplomacy, explaining that "Our blokes look after the aircraft better." In his opinion, they were also possibly trained better. "It could be that, being a smaller outfit, we try harder, too," he said. "That makes for more of a competitive spirit, more pride and incentive. We know that everyone is looking at us."

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Officers in the 834AD headquarters added other possible explanations, pointing out that that RAAF squadron was smaller than the USAF C-7 fleet and their C-7s recovered every night at Vung Tau. It was a self-contained unit with its own maintenance men. On the other hand, the USAF often had its C-7s stage from airfields where there were no specialized maintenance men. These 834AD officials agreed that the RAAF No. 35 Squadron, being a smaller unit, understandably had a more "gung ho" spirit, less easy to attain when a unit is more spread out and part of a larger management system.

As for the larger cargo loads, these men said that because of the USAF's more extensive command-and-control system in Vietnam, there was more avionics equipment aboard their USAF C-7s; and the weight of this equipment necessarily had to be subtracted from the allowable cargo weight. Other performance achievements of the RAAF were explained by the fact that the USAF imposed greater restrictions on crew duty times: "In the RAAF, they're looser, not as strict. They fly till the mission is finished. We fly till the crew duty time is up."^{121/}

RAAF explanations were not much different:^{122/}

We have regulations regarding crew rests, but here in the war zone we have to interpret them more flexibly. We do things we wouldn't do at home. The aircraft, though, are more strictly controlled than the aircrews.

The greater payloads were also said to be the result of different loading methods, and the RAAF Headquarters Air Staff Officer cited the

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rivalry between crews, mentioned earlier, as a factor in upping the overall average.^{123/}

Depot-level maintenance and inspect-repair-as-necessary (IRAN) servicing for the RAAF Caribous were done on contract by civilian firms. The RAAF aircraft were included in the same contract negotiated by the USAF for its Caribous, with the RAAF paying its part. In 1967 the firm was Air Vietnam; later, Philippine Air Lines and Thai Airways.^{124/}

All other maintenance was performed by RAAF mechanics at Vung Tau. Most of the spare parts were common to both the USAF and RAAF versions of the C-7, and were "bought" from the 483d TAW at Cam Ranh Bay. Those peculiar to the Australian version were supplied from Australia. The rate of inflight failures of the RAAF Caribous was said to be "very low," and, although they took their fair share of hits from ground fire around forward airfields, not one had been shot down as of late 1970.

AERIAL PORTS

The RAAF in Vietnam had its own aerial ports at Vung Tau, Phan Rang, and Tan Son Nhut. Organizationally, they were not part of the No. 35 Airlift Squadron, but belonged to the local RAAF units, except for the Tan Son Nhut "movement control section," which was placed directly under the RAAF headquarters in Saigon. The Australian Task Force headquarters at Nui Dat also had a section which was staffed by the Army. The movement sections up country handled military aircraft only and came under the operational control of the Tan Son Nhut section, which had the

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responsibility for coordinating all air movement of cargo and passengers within Vietnam.

The reasons given by RAAF personnel for the establishment of these sections included not only the fact that they gave the Australians a symbolic presence for the benefit of their morale, but also that they were needed for practical reasons. USAF aerial port personnel could have handled the C-7s under the same integrated concept that governed the management of all airlift, and in fact they did when RAAF C-7s delivered cargo to U.S. bases other than Vung Tau, Phan Rang, and Tan Son Nhut. But the RAAF movement agencies were created at these three bases primarily to handle Qantas charter and RAAF C-130 aircraft from Australia (See Figure 16), on the theory that people were needed who could work smoothly with Australian methods, people, and aircraft.^{125/}

Jet airliners were chartered from the government-owned and operated Qantas Airlines early in 1968 to make weekly round trips from Sydney for the PCS movements of Australian personnel from all three services--an average of 162 men each way. The Tan Son Nhut section handled Australian personnel and cargo brought into Vietnam by this and all other civil airlines. Another reason cited to justify the existence of RAAF movement sections was that they constituted a good training ground for the Australian military under wartime conditions.^{126/}

Although the RAAF sections handled all Australian aircraft, including the C-7s, they maintained a close working relationship with USAF aerial

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port people. Particularly was this true of mortuary duties in connection with the remains of dead Australian personnel, for the booking of U.S. space-available passengers on the RAAF C-7s, and for the RAAF section's handling of the supplemental USAF C-123s and C-130s furnished by the 834AD once a week to funnel PCS passengers from Australian units down to Tan Son Nhut for the weekly Qantas flight to Sydney--as well as those incoming personnel reporting for Vietnam duty. There were 11 such feeder flights in 1970 on the day of the weekly Qantas charter flight, and it was a long day for the Tan Son Nhut section: the four enlisted men, one warrant officer, and one flight lieutenant (corresponding to the USAF captain) worked from 0600 to 1900. The air movement sections at Phan Rang, where the RAAF Canberra bomber squadron was based, and at Vung Tau serviced RAAF C-130s from Australia, which also carried passengers but primarily military supplies and aircraft spares. At Vung Tau and Tan Son Nhut, the movement sections maintained a close working relationship with the airlift-control elements (ALCEs) of the 834AD, as did RAAF aircraft.^{127/}

To give an idea of the scope of operations of an RAAF movement section, the average movement figures of the Tan Son Nhut section may be cited--the reader keeping in mind that the operation there was higher in passengers and lower in freight than at the other sections. For the 12 months from July 1969 through June 1970 the Tan Son Nhut section averaged 325 aircraft movements, 6,500 passengers, and one-half million pounds per month. On a typical day, other than the day of the Qantas flight, the section handled the loading and offloading of four RAAF C-7s--one

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The more seriously wounded Australian troops were evacuated to Australia by RAAF C-130s. Australian aerial-port personnel loaded or coordinated the air movement of all Australian passengers and cargo in, to, and from Vietnam.

FIGURE 16

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dedicated-user mission for the Australian forces only and three missions,
both common service and dedicated-user, on behalf of the U.S. forces.^{128/}

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CHAPTER VI

FORWARD AIR CONTROLLERS

Eight RAAF fighter pilots with backgrounds in F-86s and Mirages were serving as forward air controllers in mid-1970. The U.S. and Australia had agreed that, as with all Australian personnel, they would serve solely within the borders of South Vietnam; consequently, they did not take part in the 1970 Cambodian campaign.^{129/} In the same way, two New Zealanders with strike fighter backgrounds were also attached to U.S. units as FACs. Some of the Australians became air liaison officers, advising the Army on the use of tactical air.^{130/}

But there were few analogies between this program and the rest of Australia's involvement with the Free World effort in Vietnam, which included the deployment of entire units. How these FACs operated and were assigned made the program more closely resemble an exchange program between allies. It was also quite similar to the Royal Australian Navy's program, cited earlier, which integrated helicopter crews into U.S. Army helicopter companies. In the program can be seen two motives: to aid the Free World's effort to combat Communism's spread and to gain experience in American counterinsurgency methods, for evaluation by RAAF headquarters.

The Australian and New Zealander FACs were assigned to 7AF and employed according to the 504th Tactical Air Support Group's needs. Like the Navy helicopter crews, their status was fairly unique. Although they wore the uniforms of their countries and their administrative support and

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pay came from Australia and New Zealand, the USAF was responsible for their "health, welfare, morale, and duty assignment," in the words of a U.S. tactical air support squadron commander.^{131/}

Serving, then, in the same duty status as the American pilots, the Australians in some instances supervised U.S. personnel and in others were supervised by U.S. personnel.^{132/} The 504th divided its personnel among some 80 forward operating locations, in order that they might work closely with army commanders in the field and advise them; directing air strikes was only one of their duties. The Australians worked with U.S. personnel as air liaison officers, occasionally as duty officers in the direct air support centers (DASCs), and also as FACs.^{133/} When the Australians flew as FACs or to reconnoiter visually, their aircraft in most cases were USAF OV-10s, less often O-1s or O-2s.^{134/}

One Australian FAC remained almost constantly at Vung Tau, the principal RAAF installation in Vietnam, but this was because the army unit he supported was the Australian Task Force, which never moved out of flying distance of Vung Tau, as it fought in Australia's area of responsibility. Since many of the air strikes in this area were also conducted by the RAAF Canberras from Phan Rang AB, this FAC did much of his work with his own country's aircraft, in support of his own country's army. One such FAC, mentioned earlier, completely reoriented the employment of the Canberra squadron and in so doing raised its BDA to the highest in South Vietnam (See pp. 19-20).

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Until April 1969, there were only four Australian FACs in Vietnam, at which time they were increased to eight, at the request of 7AF Headquarters. A year later, however, 7AF was informed that RAAF fighter squadron manning levels dictated a reduction to four again. As a result, beginning in May 1970, some RAAF FACs who had served their tours were not replaced, and the expectation was that by the end of 1970 they would again be down to four.^{135/}

Before coming to Vietnam, an RAAF FAC was required to have had ground-attack experience and FAC schooling. He was usually a long time fighter pilot who had attended a two week Australian Joint Warfare School course and a two week RAAF forward air controller course. Although the composition of an Australian tactical air control party differed from that of an American party, the FAC procedures in the air were very similar. The main difference lay in the fact that their training was for a situation which contained the element of serious ground fire, whereas U.S. procedures in Vietnam had developed in a permissive environment.^{136/}

An Australian pilot with almost a year's experience as a FAC and air liaison officer (ALO) in Military Region 2 said:^{137/}

What we trained for was the worst: the fighters come in low and they hit fast, with the FAC trying to stay out of sight. Obviously, it is not the ideal system here, especially when friendly troops are around, because you lose accuracy. Most likely, the Vietnam procedures will not be used again in the next war, though. You probably won't be able to stay over the target as long. There is a weakness too, in the present system here: The FAC can easily

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slip into regarding the environment as being too permissive and stay too long over the target before the fighters come. This of course tips off the VC and allows them to get away.

Perhaps because of their experience, Australian FACs had the clear impression that they were highly regarded by U.S. Army officers. (Contributing to this regard was an ignorance of RAAF rank titles; hearing a FAC identify himself as "Squadron Leader So-and-So" or "Wing Commander So-and-So" induced an attitude of respect on the part of many U.S. Army commanders, according to one RAAF FAC.^{138/}) Over two-thirds of the U.S. FACs in Vietnam in late 1970 were "low-time" pilots, that is, with less than 750 hours' flying time. They were young, and they were not experienced fighter pilots, having been given the so-called "instant fighter pilot" course in the AT-33. These reasons may also have contributed to the relative respect shown to the RAAF controllers and ALOs.^{139/}

The Australian ALO quoted above was instrumental in diminishing the number of preplanned strikes that were being wasted on doubtful targets in his area until early 1970. According to this ALO, the U.S. Army division he worked with

...was doing no targeting--or very little. The division was then responsible for this, but all they did was routinely ask for three strikes every day, and then just turn them over to the FACs. It was up to the FAC to try to find something for the fighters to expend on. If the Army was asked specifically to come up with a target, all they did was produce the coordinates for bunkers from old records, bunkers that had been located months before. There were no strikes related to the current

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tactical situation. When the brigades took over targeting, I told mine that they must provide fresh targets themselves or I wouldn't request an airstrike. It shows that the Army must not have valued these strikes too much because they immediately halved the number they requested, then quartered them.

In July, II Field Force tightened up on preplanned strikes and allowed them only for known enemy locations and prestrikes (clearing an area before a ground sweep). Then in August the USAF adopted its "wet-season posture," which cut down the number of strikes again, and this time a competition started among the brigades to get the few strikes allocated. To get them, they had to select really good targets, and finally the targets came to be actually allied to the tactical situation.

The same RAAF ALO believed that locations in heavy jungle were given to the fighter aircraft with too much imprecision. The army patrol could not be expected to give the coordinates of the located target with less than a 200-meter margin of error, and the FAC could not interpret the coordinates any more precisely. The result: too many "treebusters." It was the ALO's considered opinion that a regulation or SOP should be issued, requiring that the location of targets in heavy jungle be confirmed by a light observation army helicopter, whose pilot could note the physical characteristics of the place and give the FAC something more than six-digit coordinates. If the Army commander refused to allow some of his allocated helicopter flying time to be used for this, this ALO believed that the fighter aircraft should also be refused for the strike, inasmuch as the chances of a cost-effective strike would otherwise be too low under these circumstances. Once educated to the advantages of

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using observation helicopters in this way and to the necessity of confining strikes to only lucrative targets, ground commanders usually came to share these opinions. But the RAAF man said that one of the FACs' and ALOs' biggest problems was educating and re-educating these commanders because of the constant rotations.

His other strong recommendation, as seen from an RAAF FAC's point of view after a year's tour of duty, concerned the OV-10 FAC aircraft. He maintained that Army troops preferred the helicopter gunship to tactical aircraft for support when there was contact with the enemy--and so did he--because of the shorter response time (15 minutes' maximum, as compared with 20-45 minutes). But most of all they liked the armed FAC; he was usually the first on the scene, when there was radio contact. The RAAF ALO simply recommended more armament for armed FACs. ^{140/}

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CHAPTER VII

ARMY USE OF TACTICAL AIR

Phuoc Tuy Province, the Australian Task Force's normal area of responsibility, was never the scene of large pitched battles. Close air support, therefore, mostly took the form of applying minigun fire, usually from helicopter gunships, in small contacts with the enemy. Fighter-bombers were used, but, more often than not, only after contact was broken. On the other hand, hitting planned targets followed the more orthodox pattern, except that there were fewer targets. The geography of the province allowed fewer sanctuaries and places lending themselves to enemy troop and supply concentrations; in addition, it had a low Communist military population.^{141/}

In the case of immediate air requests, it was the ground commander in most cases who originated them. An air liaison officer from the tactical air control party or a FAC advised the commander and the task force on the tactical aircraft and ordnance suitable for his situation and passed on the request to III DASC at Bien Hoa, whence it went up to the TACC at Tan Son Nhut. The task force itself could give the military clearance for the strike. Political clearances were requested by the task force, often down at the province sector level.

Influenced by feelings of over-caution verging on fear, Australian army commanders were more hesitant than Americans about calling in tactical air strikes against enemy troops, when their own soldiers were in the vicinity. They were not used to having bombs and napalm dropped from the

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air by pilots who they felt did not always have a clear and complete mental picture of the friendly troops' place in the tactical situation. Cluster-bomb units or unusual weapons were not used in Phuoc Tuy at all. Helicopter and fixed-wing gunships, on the other hand, were readily accepted and frequently requested by the Australian Army officers, who seemed to be more familiar with their characteristics and more enthusiastic about their capabilities.^{142/}

To add flexibility to the Australian commanders' tactics and greater firepower to the arsenal available to them, an indoctrination program on tactical air was started by 7AF in early 1970 for all incoming Australian ground commanders. Company commanders and forward observers were given indoctrination flights in fighter and FAC aircraft and were taken to watch actual air strikes near friendly troops in other provinces. In addition, briefings were given to key Australian personnel. In May of the same year, two months after the indoctrination program had started, the assistant ALO at the task force headquarters said that the program was beginning to show results and that commanders were becoming more willing to use tactical aircraft in support of their men.

There was of course no such reluctance to use tactical aircraft against programmed targets in Australia's area. Most of these were enemy base camps and supply caches, although, whenever VC troops were reported to be in a given place, these "known enemy locations" were assigned the highest priority for strikes--the order of priorities being (1) known

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enemy locations, (2) the preparation of landing zones, and (3) base camps. The Australians did not attempt to distribute planned strikes among the unit commanders; the task force selected the most important target at any one time regardless of where it lay.

The Australians had one of the better systems for finding targets. American ALOs working with them claimed there were few "tree busters" when the recommended targets were attacked. The primary system used for identifying targets consisted of visual reconnaissance (VR) teams of one Australian Army helicopter and one USAF O-2. The Australian helicopter flew at altitudes from 10 to 150 feet, often with a "people sniffer" device aboard, while the FAC aircraft provided area navigation and escort for the helicopter. The system was extremely successful and resulted in positive identification of the target itself and nearby physical features in 90 percent of the cases. Only 10 per cent of the time, therefore, did the FAC and strike aircraft have to rely solely on six-digit coordinates.^{143/} Although a strike had to be categorized as deriving from "single-source intelligence" when the team was used, these "single sources" were the most accurate and productive, contrary to cases elsewhere in which a "single source" was considered to be of low reliability. A comparison with other tactical areas in South Vietnam shows that the only ones having a comparably high percentage of targets with positive identification were areas where similar helicopter/FAC teams were used for VR.^{144/}

Other methods of identifying targets in Phuoc Tuy Province included

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the use of long-range reconnaissance patrols, Communist defectors, special agents, and prisoners. Photo reconnaissance was hardly used at all.

In a nightly conference, the Australian Task Force staff decided upon the targets to be struck. The USAF (and occasionally RAAF) ALOs made their recommendations to the task force G-3 (operations), and they were usually accepted--the TACP being readily accepted as the experts in the use of air and as reliable locators of targets. From 1 February through April 1970, only five of the 125 recommendations for preplanned strikes originated with commanders in the field. A 90-day record of BDA coordinated with targets was also kept, and it, too, was an extremely valuable addition to the intelligence brought in from other sources. Many targets in the province's mountain sanctuaries were hit again and again.

The task force command post obtained military clearance for preplanned strikes by a net which went from Australian G-2 through II Field Force, Vietnam, at Bien Hoa, to MACV's tactical air support element and over to 7AF's Tactical Air Control Center. Political clearance from the Vietnamese was obtained by the task force command post through the province sector official.

The strike itself was usually carried out with the aid of an Army helicopter/USAF O-2 FAC aircraft team, like the VR team which probably first uncovered the target. The Army H-13 marked the exact target location from a 10-to-50-foot altitude. Then the Air Force FAC directed the fighters

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to the smoke dropped from the helicopter and gave them clearance to expend. This done, the fighters were generally able to deliver their ordnance with considerable accuracy, thanks to the extreme accuracy of the mark provided by the helicopter.

Most of the targets hit were bunker complexes and caves, and for these the usual 750-lb. bombs with delayed fuzing were most effective, instantaneous fuzing being sufficient where cover was lighter. Napalm was also used against exposed enemy troops, as well as occasionally against the bunkers and caves.^{145/}

The effects of air raids on the VC base camps and supply caches in Phuoc Tuy Province were difficult to assess. Most of them were in the Long Hai Mountains, which were heavily mined and almost impervious to reconnaissance patrols. Possibly the greatest effect of the bombing was that it never left the VC alone. They could never relax, and, being constantly off balance, they were kept on the move. The effects, therefore, were both material and psychological.

The camps had to be shifted continually, at a cost of extensive building of bunkers and other protective construction. Additionally, there was destruction of supplies. Very frequently, FACs reported "negative BDA" after air strikes because none could be seen from the air, but patrols sent in afterwards reported up to 90 per cent of the camps and supplies had been destroyed by these same strikes--"more often than

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not," according to the USAF assistant ALO in 1970. Rendered wary by incessant tactical and B-52 air strikes, the VC were reluctant to leave the environs of their nearly invulnerable permanent installations inside deep-buried caves and tunnels. The price of survival became immobility.

There were indications that over the long run, Allied air strikes had a demoralizing effect in Phuoc Tuy Province. But probably the most valuable effect, from the Free World's point of view, was that the air activity prevented the VC from enjoying unrestricted movement and from carrying out more numerous offensive attacks on Australian troops and further propagandizing of villagers.^{146/}

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GLOSSARY

AID	Agency for International Development
ALCE	Airlift Control Elements
ALO	Air Liaison Office
AMMC	Air Materiel Management Center
Anzac	Australian and New Zealand Army Corps
AOG	Aircraft on Ground--the RAAF equivalent of USAF's NORS
ARVN	Army of the Republic of Vietnam
ATF	Australian Task Force
BDA	Bomb Damage Assessment; Battle Damage Assessment
CHECO	Contemporary Historical Examination of Current Operations
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
CONUS	Continental United States
DASC	Direct Air Support Center
DOD	Department of Defense
FAC	Forward Air Controller
FM	Frequency Modulation
IRAN	Inspection and Repair As Necessary
KBA	Killed by Air
MACCORDS	Military Assistance Command Civil Operations and Revolutionary Development Support
MACV	Military Assistance Command, Vietnam
MR	Military Region
NORS	Not Operationally Ready, Supplies
OR	Operational Readiness
RAAF	Royal Australian Air Force
RAAFAFV	RAAF Australian Force, Vietnam
RAAFV	Royal Australian Air Force, Vietnam
RVN	Republic of Vietnam
SEA	Southeast Asia
SOE	Staff Officer, Equipment

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TACC	Tactical Air Control Center
TACP	Tactical Air Control Party
TFW	Tactical Fighter Wing
USAF	United States Air Force
USAID	United States Agency for International Development
USARV	United States Army, Vietnam
VC	Viet Cong
VNAF	Vietnamese Air Force
VR	Visual Reconnaissance